

Remarks

Claims 14-19 and 21-23 are pending. The Examiner has withdrawn Claims 23-25 from consideration. Accordingly, Claims 23-25 are canceled in this Response.

Applicant acknowledges with appreciation the detailed remarks made by the Examiner in response to Applicant's arguments. While the Applicant may not agree with the Examiner's position, it is much easier to respond when that position is clearly explained.

Double Patenting

The Terminal Disclaimer is signed by Steven R. Ormiston. Mr. Ormiston is an attorney of record as evidenced by the ELECTION UNDER 37 C.F.R. §§ 3.71 AND 3.73 AND POWER OF ATTORNEY filed in the grandparent on September 3, 1998. Applicant requests, therefore, that the objection to the Terminal Disclaimer be withdrawn. (A copy of the Election is attached to this Response.)

Proposed Amendment to Claim 19

Applicant proposes to amend Claim 19 to recite fully curing the coating by exposing the coating to ultraviolet light and thereby further distinguish Kovac, Xu and Higgins.

Reconsidering the Rejections Based On Kovac

Claims 14, 15 and 19 stand rejected as being obvious over Kovac (6,525,429). The Examiner acknowledges the fact that curability is a characteristic of the material -- "the fact that the material *is curable* is clearly a characteristic of the material." Office Action page 6. The Examiner then goes on to assert, apparently, that the *type* of curability is not a characteristic of the material:

"However, a material is cured by the application of heat or thermal energy. Whether the heat or thermal energy is applied by using ultraviolet light or a conventional furnace, for example, is drawn to the process by which the material is cured and is clearly not a characteristic of the material. If Applicant contends that the claimed material is only curable by the application of UV light, scientific evidence supporting this position should be made of record, that is, evidence must be presented showing that the claimed material is not curable by the application of heat or thermal energy in any other form but UV light. Note that Kovac discloses that the elastomer can be either heat treated or exposed to ultraviolet light or *a combination of both*

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heating and exposing, see col. 5, lines 30-36." Office Action pages 6-7 (emphasis in original).

Applicant does not dispute that some materials are cured by the application of heat or thermal energy. It does not necessarily follow, however, that *all* materials can *only* be cured by heat or thermal energy. It might very well be that some materials can be cured without heating and without exposing the material to "thermal energy." If the Examiner disagrees, and she feels it is important to the rejection, then she is the one with the burden of proving such a far reaching and seemingly novel theory.

In any event, whether or not some materials can be cured without heat and whose burden it might be to prove or disprove the proposition does not appear to be important to the question of the patentability of Claims 14, 15 and 19. Claims 14 and 15 recite a protective material fully curable by exposure to ultraviolet light. Claim 19 recites coating substantially all of a semiconductor die with a polymer that is fully curable by exposure to ultraviolet light. The claims do not recite a material that is only curable by the application of ultraviolet light. That is to say, the claims do not necessarily exclude materials that might be curable by the application of heat or "thermal energy." But, and this is a BIG BUT, the material absolutely must be fully curable by exposure to ultraviolet light. Kovac does not teach any such material. Admittedly, the material in Kovac might be fully curable by exposure to ultraviolet light, but the plain fact is that Kovac does not teach that his material is fully curable by exposure to ultraviolet light.

So, that leaves us with the Examiner's apparent assertion that curability is a characteristic of the material, but ultraviolet curability is not. There is no rational basis for this distinction. If curability in general is a characteristic of the material, then the specific type of curability is also a characteristic of the material. An illustration may be helpful. A puddle of material A is placed next to a puddle of material B. Material A is fully curable by exposure to ultraviolet light. Material B is fully curable but not by exposure to ultraviolet light. When the puddle of material A is exposed to ultraviolet light, it cures fully. When the puddle of material B is exposed to ultraviolet light, it does not cure fully. Clearly, material A and material B are not the same material. That is to say, material A and material B have different characteristics before, and without regard

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to, exposing them to ultraviolet light. If they had the same characteristics, then they would both react the same when exposed to ultraviolet light. Even if material A and material B are both fully curable by heating or by a combination of heating and exposure to ultraviolet light, they are still different materials because one is fully curable by exposure to ultraviolet light and one is not fully curable by exposure to ultraviolet light.

Finally, any assertion that all curable materials, including Kovac's Dow 577 elastomer, are fully curable by exposure to ultraviolet light is inconsistent with the teachings of Kovac. As the Examiner quite correctly notes, Kovac distinguishes between curing by exposure to ultraviolet light, curing by heating, or curing by a combination of the both – exposing to UV light to form a skin on the elastomer and then "curing or partially curing the elastomer by a heating step." Kovac, column 5, lines 30-38.

Kovac simply does not teach or suggest a protective material that is both (1) fully curable by exposure to ultraviolet light and (2) shrinks 10% or less by volume upon curing.

Reconsidering The Rejections Based On Xu

Claims 15-22 were rejected under Section 103 as being obvious over Xu (6168898) in view of Higgins (5583370). The Examiner argues the combination is motivated as follows.

"In light of the disclosure of Higgins, III et al., it would have been obvious to one skilled in the art that the composition disclosed by Xu et al. could be used as the encapsulant in the known method of Higgins, III et al., since the composition of Xu et al. is an epoxy-based resin and curable by radiation (UV). Alternately, in light of the teaching of Higgins, III et al., it would have been obvious to one skilled in the art that the composition of Xu et al. could be used as an encapsulant for a semiconductor die, since Higgins, III et al. disclose that radiation-curable epoxy resins can be used as encapsulants for semiconductor dies." Office Action pages 5-6.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP § 2143.01. Simply restating the disparate teachings separately

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from each reference is not a suggestion or motivation to combine these teachings. The Examiner is obligated to show a suggestion to make the combination.

The fact that Xu lists phenol-formaldehyde novolac resins and triaryl sulfonium hexafluorophosphate as suitable materials (along with a veritable laundry list of other materials) for his dielectrics does not render obvious any and all uses of such materials. There is nothing in Xu that even remotely suggests using these materials for any kind of semiconductor package, specifically including covering the top of a semiconductor die as in Higgins. There is nothing in Xu that can reasonably be deemed to teach or suggest that any of his materials could or should be used as constituent parts of a protective material covering a semiconductor die. Similarly, there is nothing in Higgins that teaches or suggests looking to the dielectrics disclosed in Xu for other types of die coatings. The combination, therefore, is not properly motivated.

If the Examiner disagrees, she is respectfully requested to specifically point out and explain those passages in Xu that suggest the materials he uses for dielectrics in microvias and solder masks could or should be used as die coatings; or to specifically point out and explain those passages in Higgins that suggest looking to microvia and solder mask dielectrics for die coating materials. Absent such a showing, the rejections based on the combination of Xu and Higgins should be withdrawn.

The foregoing is believed to be a complete response to the pending office action.

Respectfully submitted,
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